



A process for making Nitinol rolling bearing elements of a desired shape, 1. (Original) comprising:

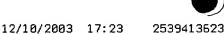
making a ceramic mold having a cavity with an internal shape like said desired shape of said rolling bearing elements;

pouring molten Nitinol into said cavity; cooling said mold and said Nitinol in said cavity to produce a solidified Nitinol form; and disintegrating said mold to remove said Nitinol form.

- A process as defined in claim 1, further comprising: 2. (Original) after removal of said Nitinol form from said mold, subjecting said Nitinol form to hot isostatic pressing at about 1650°F and 20,000 psi for about 2 hours.
- A process as defined in claim 1, wherein said rolling bearing element is a 3. (Original) cylindrical roller bearing roller and said Nitinol form is a rod, and further comprising: centerless grinding said rod to the desired maximum diameter of said roller elements; and; cutting said rod to individual rollers about the length of said roller bearing elements.
- 4. (Original) A process as defined in claim 3, further comprising: centerless grinding said individual rollers to the desired diameter and profile of said roller elements.
- A process for making Nitinol ball bearing elements, comprising: 5. (Original) making a ceramic mold having elongated branches with spherical ball cavities therein; pouring molten Type 60 Nitinol into said mold and allowing said molten Nitinol to flow into and fill said spherical ball cavities;

cooling said mold and said Nitinol in said mold to produce a solidified branch of connected Nitinol balls:

breaking said mold away from said Nitinol balls; and separating said balls from said branch.



A process for making Nitinol ball bearing elements as defined in claim 5, (Original) 6. further comprising:

after removal of said Nitinol branch of connected balls from said mold, subjecting said Nitinol branch of connected balls to hot isostatic pressing at about 1650°F and 20,000 psi for about 2 hours.

A process for making Nitinol ball bearing elements as defined in claim 5, 7. (Original) further comprising: grinding said balls to smooth spheres of the desired diameter.

- A process as defined in claim 5, further comprising: 8. (Currently Amended) heating said balls to about 950°C and liquid quenching to harden said balls to about 62RC and produce a hard integral eeramie oxide surface on said balls.
- (Currently Amended) A Nitinol ball bearing element for use in a ball bearing for 9. supporting a rotating shaft, comprising: a sphere of Type 60 Nitinol.
- A Nitinol roller bearing element for use in a roller bearing 10. (Currently Amended) for supporting a rotating shaft, comprising: a rod of Type 60 Nitinol.
- A process as defined in claim 21, further comprising: (Currently Amended) 11. heating said Nitinol form to an elevated temperature in a range of about 800°C-950.C and rotary forging said Nitinol form bar at said elevated temperature to produce a hot-worked rod having a diameter slightly greater than the desired diameter of said roller rolling bearing elements.
- A process for making balls out of a material such as Nitinol that is difficult 12. (Original) or impossible to form into a ball, comprising:

selecting a sheet or plate of said material; cutting ball blanks out of said sheet or plate; and grinding said ball blanks in a ball grinder to a desired spherical shape and size.



- 13. (Original) A process as defined in claims 12, wherein: said ball blanks are cubical in shape.
- 14. (Original) A process as defined in claim 12, wherein: said ball blanks are cylindrical in shape.
- 15. (Original) A process as defined in claim 12, wherein: said ball blanks are cut out of said sheet or plate by an industrial cutting laser.
- 16. (Original) A process as defined in claim 12, wherein: said ball blanks have a center and six equal orthogonal dimensions through said center.
- 17. (Original) A process as defined in claim 16, further comprising: tumbling said ball blanks in and abrasive tumbler to round off corners and edges of said ball blanks prior to grinding said ball blanks in said ball grinder.
- 18. (Currently Amended) A process for making Nitinol bearing races, comprising: selecting a tube made of Type 60 Nitinol and having a central axis; cutting bearing race blanks off said tube on a cutting plane perpendicular to said central axis; and

grinding or machining said race blanks to desired outside dimensions and interior configuration.

- 19. (Original) A process as defined in claim 18, further comprising: heat treating said race blanks to about 900°C and quenching to produce hardness of above about 58RC.
- 20. (Currently Amended) A bearing race for a rolling element bearing, comprising: an annular ring of Type 60 Nitinol free of substantial compressive prestress.